

WHAT IS CLAIMED IS:

5 1. A moving mechanism, comprising:
a reference structure having a guide surface;
a movable portion being movable along the
guide surface; and
an actuator having a movable element disposed
at the movable portion side and at least two stators,
said stators being separated from each other and being
moved by a reaction force produced as the movable
10 portion is driven.

15 2. A moving mechanism according to Claim 1,
wherein said stators are movable along the guide
surface.

20 3. A moving mechanism according to Claim 1,
wherein said stators are movable in two-dimensional
direction along the guide surface.

25 4. A moving mechanism according to Claim 1,
wherein said actuator is a linear motor having a
movable element and a stator.

5. A moving mechanism according to Claim 4,
wherein the stator of said linear motor is provided by
a coil, and the movable element of said linear motor
is provided by a permanent magnet.

6. A moving mechanism according to Claim 4,
wherein the stator of said linear motor is provided by
a permanent magnet, and the movable element of said
5 linear motor is provided by a coil.

7. A moving mechanism according to Claim 1,
further comprising a position measuring device and a
driving mechanism, for positioning a reaction force
10 counter being moved along a plane due to a drive
reaction force of said movable portion as received by
the stators.

8. A stage having a moving mechanism as recited
in Claim 1, and having a position measuring device and
a driving mechanism for positioning a movable portion.

9. A stage according to Claim 8, further
comprising an actuator for controlling the position of
20 the stator.

10. A stage according to Claim 8, wherein said
stage is movable in six-axis directions and having a θ
and Z tilt stage mounted thereon.

11. An exposure apparatus, comprising:
exposure means for projecting a portion of a

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circuit pattern on a substrate through a projection optical system, and for printing a predetermined exposure region of the pattern of the original on the substrate; and

5 a stage as recited in Claim 8, for moving the original and/or the substrate for exposure thereof.

10 12. An apparatus according to Claim 11, wherein the exposure is performed by scanning exposure in which the original and the substrate are scanningly moved relatively to the projection optical system whereby a predetermined exposure region of the pattern of the original is scanningly printed on the substrate, and wherein, for the scan, the original
15 and/or the substrate is moved by said stage.

20 13. An apparatus according to Claim 11, wherein said stage is connected to a barrel base on which the projection optical system is mounted.

14. An apparatus according to Claim 11, wherein ultraviolet light is used as exposure light.

25 15. An apparatus according to Claim 14, wherein the ultraviolet light is laser light from a laser source.

~~SUB 13~~
~~Q38~~ 16. An apparatus according to Claim 15, wherein the laser light is fluorine excimer laser.

17. An apparatus according to Claim 15, wherein
5 the laser light is ArF excimer laser.

18. An apparatus according to Claim 11, wherein,
in said stage, the relation between a stator and a
movable element of a linear motor is based on an open
10 structure, and wherein a shielding wall is provided
inside the stator, said shielding wall extending from
an illumination optical system and/or a projection
optical system to the substrate structure, while
enclosing a movable portion having the movable
15 element, the inside space being purged by use of an
inactive gas.

19. An apparatus according to Claim 18, wherein
an interferometer for use as position measuring means
20 is provided in a purge area inside the shielding wall.

~~SUB 13~~
~~Q39~~ 20. An apparatus according to Claim 19, wherein
the reaction force counter is supported by an actuator
for producing a thrust in a straight direction, and
25 wherein a drive reaction force in the straight
direction is received by a reaction force receiving
structure being supported by the floor, separately

from the stage base.

21. A device manufacturing method, comprising the steps of:

5 providing a group of production machines for various processes, including an exposure apparatus as recited in Claim 11, in a semiconductor manufacturing factory; and

10 producing a semiconductor device through plural processes using the production machine group.

22. A method according to Claim 21, further comprising (i) connecting the production machines of the group with each other through a local area network, and (ii) executing data-communication concerning information related to at least one production machine of the production machine group, between the local area network and an external network outside the semiconductor manufacturing factory.

20 23. A method according to Claim 21, wherein a database provided by a vendor or a user of the exposure apparatus can be accessed through the external network so that maintenance information related to the production machine can be obtained through the data communication, and wherein production control can be performed on the basis of data

communication made through the external network and between the semiconductor factory and a separate semiconductor factory.

24. A semiconductor manufacturing factory, comprising:

a group of production machines for various processes, including an exposure apparatus as recited in any one of Claims 11 - 20;

a local area network for connecting the production machines of the production machine group with each other; and

a gateway for enabling an access from the local area network to an external network outside the factory;

wherein information related to at least one production machine in the group can be data communicated by use of the local area network and the gateway.

25. A method of executing maintenance for an exposure apparatus as recited in any one of Claims 11 - 20, provided in a semiconductor manufacturing factory, said method comprising the steps of:

preparing, by a vendor or a user of the exposure apparatus, a maintenance database connected to an external network outside the semiconductor

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5 manufacturing factory;

admitting an access from the semiconductor
manufacturing factory to the maintenance database
through the external network; and

transmitting maintenance information stored
in the maintenance database to the semiconductor
manufacturing factory through the external network.

10 26. An apparatus according to Claim 11, further
comprising a display, a network interface and a
computer for executing a network software, wherein
maintenance information related to said exposure
apparatus is data communicated through the computer
network.

15 27. An apparatus according to Claim 26, wherein
the network software provides on the display a user
interface for accessing a maintenance database
prepared by a vendor or a user of said exposure
20 apparatus and connected to an external network outside
a factory where said exposure apparatus is placed,
thereby to enable obtaining information from the
database through the external network.

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